IN THE CLAIMS:

1. (Original) A method for reducing organic depletion in an electrochemical plating apparatus, comprising:

determining a volumetric organic depletion per unit time for at least one electrochemical plating current density; and

modifying an electrochemical plating processing recipe to include real time replenishment of depleted organics in accordance with the determined volumetric organic depletion per unit time.

2. (Original) The method of claim 1, wherein determining a volumetric organic depletion per unit time for at least one electrochemical plating current density comprises conducting a test run process, the test run process comprising:

determining an initial organic concentration in an electrolyte solution;

operating the electrochemical plating apparatus using the electrolyte solution at a predetermined current density for a predetermined duration;

determining a final organic concentration of the electrolyte solution; and

determining the volumetric organic depletion per unit time for the electrochemical plating apparatus at the predetermined current density from the determined initial organic concentration and the determined final organic concentration.

3. (Original) The method of claim 2, wherein operating the electrochemical plating apparatus using the electrolyte solution at a predetermined current density for a predetermined duration further comprises operating the electrochemical plating apparatus at a plurality of predetermined current densities, wherein the plurality of predetermined current densities correspond to normal operational current densities of the electrochemical plating apparatus.

4. (Original) The method of claim 2, wherein determining the volumetric organic depletion per unit time comprises determining organic concentration differential and calculating the volumetric organic depletion from the organic concentration differential.

5. (Original) The method of claim 1, wherein modifying an electrochemical plating processing recipe to include real time replenishment of depleted organics comprises including process control steps in the plating processing recipe that provide for real-time replenishment of organics in accordance with the determined volumetric organic depletion per unit time for a specific current density used in a recipe step.

6. (Original) The method of claim 1, wherein modifying the electrochemical plating processing recipe comprises:

determining a current density used in a recipe step;

determining a corresponding volumetric depletion of organics per unit time; and

modifying the recipe step to include replenishment of the determined corresponding volumetric depletion of organics per unit time.

7. (Original) The method of claim 1, wherein real-time replenishment comprises replenishment of the depleted organics during a recipe step within which the depleted organics were depleted from the electrolyte solution.

8. (Original) The method of claim 1, wherein a microprocessor-type controller is utilized to determine the volumetric organic depletion and to modify the electrochemical plating processing recipe.

9. (Original) A method for real-time replenishment of organics in an electroplating system, comprising:

conducting a test run process for the electroplating system;

determining a volumetric depletion per unit time of at least one organic substance from an electrolyte solution from the test run process; and

modifying an electroplating processing recipe to include volumetric replenishment per unit time of a depleted organic in accordance with the determined volumetric depletion per unit time.

10. (Original) The method of claim 9, wherein conducting a test run process comprises:

determining at least one normal operational current density for the electroplating system;

operating the plating system for a predetermined time interval at the at least one normal operational current density; and

determining a concentration gradient of an organic substance in an electrolyte solution of the plating system.

11. (Original) The method of claim 10, wherein determining a concentration gradient comprises:

determining an initial organic concentration prior to operating the plating system;

determining a final organic concentration subsequent to operating the plating system; and

calculating the concentration gradient from the initial organic concentration and the final organic concentration.

12. (Original) The method of claim 10, wherein determining at least one normal operational current density comprises determining at least one current density for the electroplating system that is used in a processing recipe.

13. (Original) The method of claim 9, wherein operating the plating system for a predetermined time interval at the at least one normal operational current density comprises:

operating the plating system at a predetermined plating current density;

incrementing the predetermined plating current density; and

repeating the operation of the plating system at the incremented plating current density.

14. (Original) The method of claim 9, wherein modifying an electroplating processing recipe to include volumetric replenishment per unit time of a depleted organic comprises

adding a process control element into the electroplating processing recipe, wherein the process control element is configured to control a replenishment unit configured to add organics to an electrolyte solution.

15. (Original) The method of claim 9, wherein conducting a test run process, determining a volumetric depletion per unit time, and modifying an electroplating processing recipe comprises using a microprocessor-type controller configured to receive inputs from the electrochemical plating system and generate control signals for the electrochemical plating system.

16. (Original) A method for replenishing depleted organics in an electrolyte solution within a semiconductor processing recipe step, comprising:

conducting a plurality of electrochemical plating test runs, each of the plurality of plating test runs being at an individual current density;

determining an organic volumetric depletion per unit time for each of the individual current densities; and

replenishing organics into the electrolyte solution during the processing recipe step in accordance with the determined volumetric depletion per unit time.

17. (Original) The method of claim 16, wherein conducting a plurality of electrochemical plating test runs comprises operating an electrochemical plating system at a plurality of desired current densities for predetermined periods of time.

18. (Original) The method of claim 17, wherein the plurality of desired current densities correspond to normal operational current densities of the electrochemical plating system.

19. (Original) The method of claim 16, wherein determining an organic volumetric depletion per unit time for each of the individual current densities comprises:

measuring an initial organic concentration prior to conducting an electrochemical plating test run;

measuring a final organic concentration subsequent to conducting the electrochemical plating test run;

determining a concentration gradient between the initial organic concentration and the final organic concentration;

calculating the organic volumetric depletion from the concentration gradient; and

calculating the organic volumetric depletion per unit time.

20. (Original) The method of claim 19, wherein calculating the organic volumetric depletion per unit time comprises dividing the calculated organic volumetric depletion by a test run duration.

21. (Original) The method of claim 16, wherein replenishing organics into the electrolyte solution during the semiconductor processing recipe comprises including a time variant volumetric replenishment element in each plating recipe step of the semiconductor processing recipe, the time variant volumetric replenishment element corresponding to an input to a replenishment device configured to add organics to the electrolyte solution.

22. (Original) The method of claim 16, wherein replenishing organics into the electrolyte solution during the semiconductor processing recipe comprises adding fresh organic material to the electrolyte solution, wherein the added fresh organic material corresponds to depleted organic material.

23. (Original) The method of claim 22, wherein the adding process occurs in a real time manner.

24. (Original) The method of claim 16, wherein the conducting, determining, and replenishing steps are controlled by a microprocessor-type controller.

25. (Original) The method of claim 16, further comprising modifying an electroplating processing recipe to include process control over a replenishment device, wherein the

replenishment device is configured to add a volumetric quantity of fresh organic material to the electrolyte solution, the volumetric quantity of fresh organic material corresponding a volumetric quantity of depleted organic material.

26. (Original) A method for real-time replenishment of depleted organics in an electrolyte solution, comprising:

measuring a concentration of depleted organics in the electrolyte solution during a processing step;

transmitting the measured concentration to a system controller;

determining a replenishment of organics corresponding to the measured concentration of depleted organics with the system controller; and

replenishing organics into the electrolyte solution during the processing step in accordance with the determined replenishment of organics.

27. (Original) The method of claim 26, wherein the measuring step is conducted via a CVS assembly.

28. (Original) The method of claim 26, wherien the system controller is configured to receive measurement inputs, calculate replenishment volumes, and control a replenishment device.

29. (Original) The method of claim 28, wherein the replenishment device is a chemical cabinet in fluid communication with the electrolyte solution.